Academy

California Academy of Sciences' Member Newsletter

April/May 2000

• MORRISON PLANETARIUM • NATURAL HISTORY MUSEUM • STEINHART AQUARIUM •

Earth Day at the Academy

Open House: May 10

Celebrate the Diversity of Life

A Message for Members

You know the outcome of Proposition B, but, as I write this, three days after the election, I am still in suspended animation, watching the slow deliberations of democracy in action. I had previously drafted a victory letter and my staff prepared another for an alternative outcome, but we didn,t anticipate this limbo. However, the deadline for this newsletter is imminent, and you need your *Academy* delivered in a timely fashion.

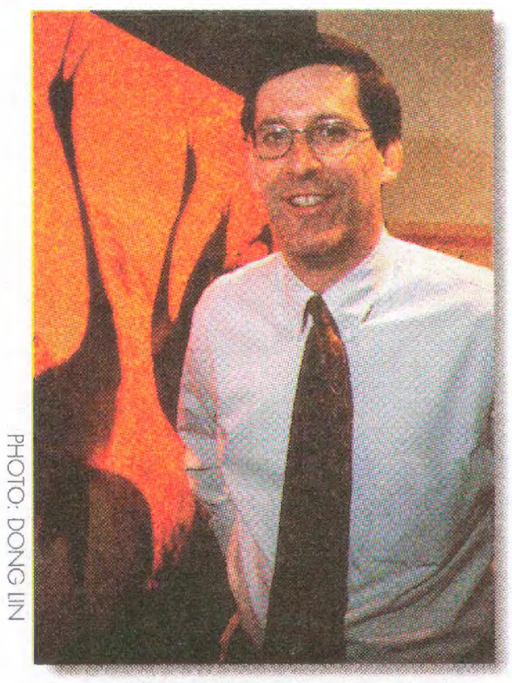

PHOTO: DONG LIN

Dr. Patrick Kociolek

Win or lose, what we will not do is compromise our goals to recreate the major institution that the Academy has been for a hundred years. In the process there will need to be some changes on this side of the concourse. One of the first will be my schedule. To raise funds and awareness of the Academy, I plan to spend lots of time traveling around the Bay Area, the country, and overseas. It's going to be hard to do that and give sufficient attention to the day-to-day operations around the Academy. And so I am delighted to announce that I have appointed Dr. Terrence Gosliner, our erstwhile Director of Research, as Provost. As well as continuing to guide the Research program, he will be responsible for overseeing all programmatic areas of the Academy: Research, Education, Exhibits, the Natural History Museum, Morrison Planetarium, and Steinhart Aquarium.

Replacing Terry as acting head of the Research Division is Dr David Kavanaugh, Senior Curator of Entomology. David has agreed to put part of his own research aside for a time in order to maintain the smooth running of the division. I hope you will join me in congratulating them on their new appointments.

Another change will be a more conspicuous participation in conservation. Much of the Academy's research is driven by the need to conserve habitats and species and maintain a healthy environment.

PHOTO: DONG LIN

Dr. Terrence Gosliner

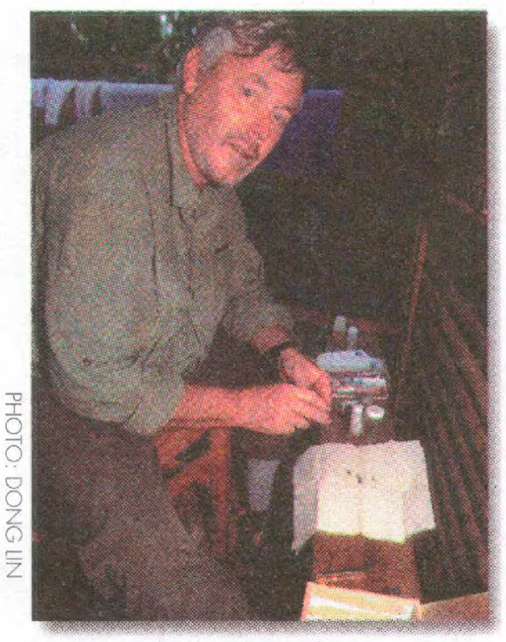

PHOTO: DONG LIN

Dr. David Kavanaugh

You will be seeing more of that involvement in our public activities in the future, beginning with our commitment to the values explicit in Earth Day. Be sure to visit the Academy this Easter Weekend and join the celebration.

Patrick Kociolek,
Executive Director

Letters to the Academy

We appreciate hearing your thoughts about our exhibits and events so that we can continue to improve the quality of your visit. Recently, we received a letter from a visitor who had a strong response to the temporary exhibition we hosted last fall, ***Africa: One Continent. Many Worlds***. We were struck by these powerful words and thought you may enjoy reading one account of the impact of this exhibit.

> ***When my friend and I visited the slave ship part of the exhibit, we had an eerie experience. I approached the 'ship' very cautiously and when I entered, I spontaneously broke into tears. I walked through and then went to the slave block auction platform. My friend had gone in front of me. When we met at the auction block, I relayed my experience to her, still slightly shaken and surprised. She looked at me incredulously. She had had the same experience and was waiting to tell me about it. We walked through the rest of the exhibit rather subdued as though we were in a cathedral. We are both African-American ladies in our 60s and have had to grow tough skins to maintain. We do not tear readily.***
>
> ***Something about that particular exhibit apparently evoked a powerful racial memory in both of us – simultaneously and unbeknownst to each. That was a powerful experience that I will remember to my dying day. The creators of the exhibit obviously infused an authenticity of spirit in the mounting of the exhibit as well as a historical authenticity. Again, accolades for the creators.***
>
> ***Fannie Lee Lowe***
> ***San Francisco***

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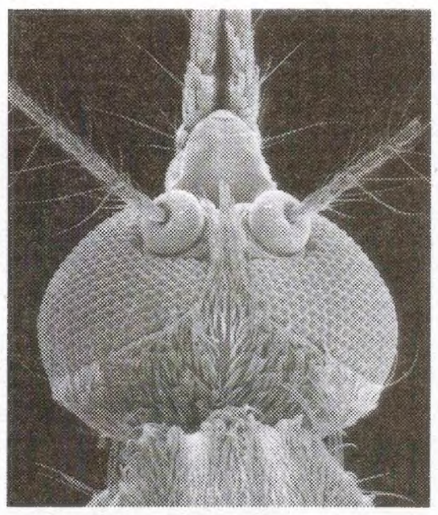
News, Notes, and Notables

From microscopic explorations to larger-than-life celebrations, there is a wide range of exciting news around the Academy.

New Scanning Electron Microscope

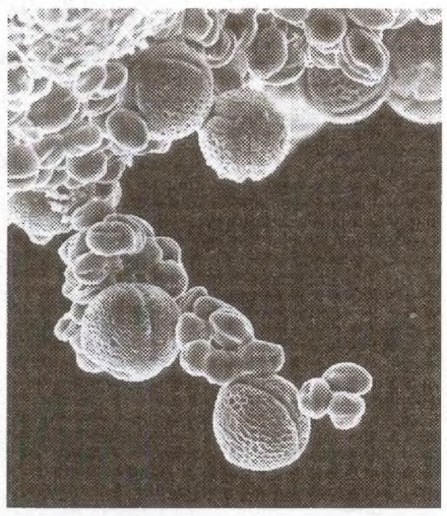
This spring, there is excitement behind the scenes where Academy scientists are enjoying powerful new technology – a scanning electron microscope (SEM) with 300,000x resolving power. This new instrument will enable researchers to identify the most minute biological structures allowing for the possible identification of many new species of organisms. The new, digital SEM will replace an older analogue device, increasing magnification abilities by about 20 times. This instrument will join other recent high tech additions to the Academy's Research Department that helps keep the Academy at the forefront of scientific discovery.



SEM PHOTO

Mosquito–head,dorsal

The Academy was awarded $114,900 from the National Sciences Foundation toward the purchase of the new SEM and the McBean Family foundation generously contributed to the matching fund. The Academy needs to raise an additional $46,599 for this purchase. The Academy is appreciative of the support of foundations and individuals participating in the matching fund.



SEM PHOTO

Pollen grain

15th Annual Academy Ball: May 19

Paradise is *not* lost. In fact, you can find it on Friday, May 19 when the museum and aquarium are transformed into "Gardens of Eden" for the Academy's 15th Annual Ball.

More than 700 guests will enjoy cocktails, champagne, hors d'oeuvres, and dinner by Dan McCall. This unique dinner setting is a highlight of the event, served in African Hall, Steinhart Aquarium, and other galleries followed by a luscious dessert buffet. Dancing to live music follows in the Whale Courtyard, while other attractions are going on throughout the museum.

PHOTO: WEBER SHIH

Last year's "Millennium Madness" ball guests and friends

This year's Ball Committee Chairs are Mr. Charles and Dr. Ann Johnson. Corporate host is Bank of America, represented by Mr. Jeremy G. Fair.

Tickets for this year's ball begin at $300 per person. Tables for groups of 10 are available at $5,000, $7,500, and $10,000. For further information, please call Deidre Kernan or Anne Rianda in the Special Events Office at (415) 750-7222.

Annual Friends Appreciation Dinner

We were pleased to see many of you at the Annual Academy Friends Appreciation Dinner in February. "Friends of the Academy play a vital role in supporting important efforts to explore and explain the natural world," said Board of Trustees chair W. Richard Bingham to nearly 200 guests.

Dr. Nina Jablonski

Following a cocktail reception in Steinhart Aquarium, guests listened to Dr. Nina Jablonski's talk, "Exploring China's Biodiversity: Past and Present." Dr. Jablonski, Curator and Irvine Chair, Department of Anthropology, has been conducting research in China since 1986. In her talk, illustrated with slides from the field, she discussed her observations and perspectives of China's natural heritage. After the talk, Academy Friends enjoyed dinner in beautiful African Hall.

Friends of the Academy are members who have contributed $1,000 or more in the past year.

Dr. Edward Ross' 60th Anniversary

We are happy to acknowledge an important Academy milestone. Dr. Ed Ross, Curator Emeritus in the Department of Entomology, recently celebrated his 60th year with the Academy. Ed was completing his Ph.D. at U.C. Berkeley in 1939 when he was offered a job in the Academy's Entomology Department. Since that time, he has traveled the world, written hundreds of articles and papers, and taken more than 100,000 photographs of insects and other animals, plants, and people. They are a testament to his life's work.

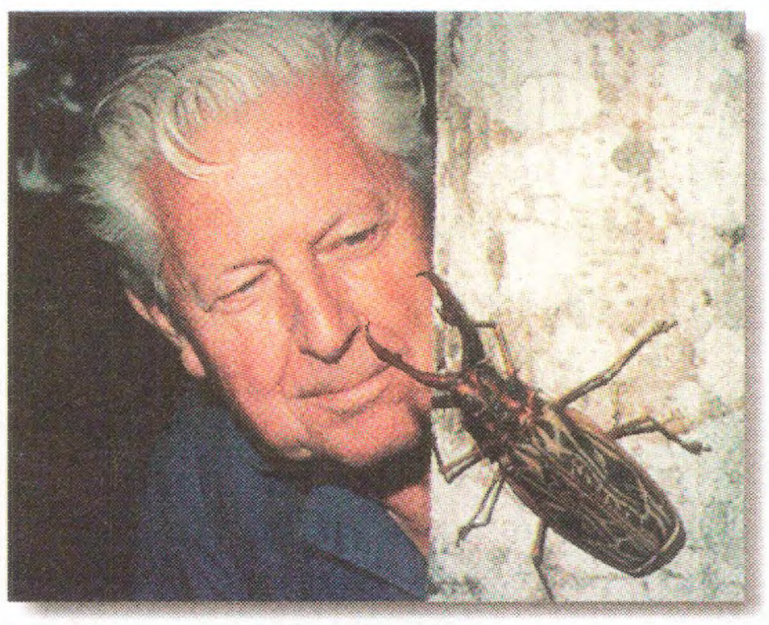


PHOTO: E. S. ROSS

Dr. Ed Ross in Ecuador in 1999

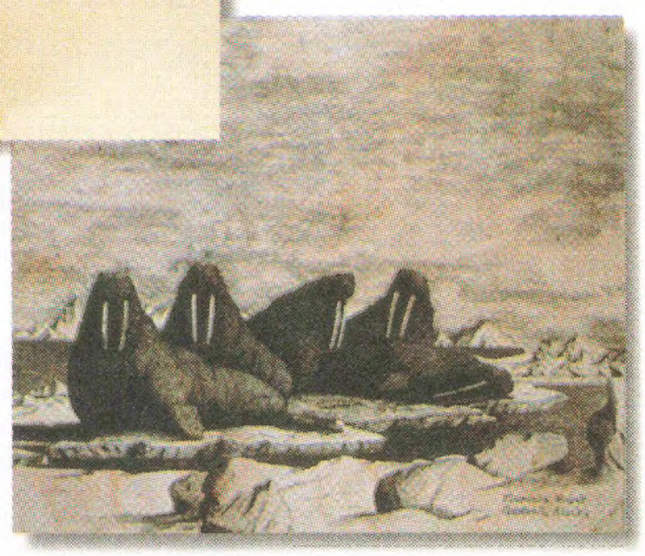
Ed Ross, age 26

EXHIBITS

New Items From The Elkus Collection On Display

It is time for a return visit to the ***The Elkus Collection: Changing Traditions in Native American Art.*** To showcase even more of the 1700 items in the Elkus Collection, and to minimize damage to light-sensitive objects, the blankets and rugs, paintings, baskets, and kachina carvings have recently been changed. Traditional Navajo and Pueblo clothing items have been added to the display. Watch Maria Martinez make her famed San Ildefonso blackware pottery or listen to contemporary California basket weavers discuss basketry traditions and current environmental concerns in two new videos.

Hopi Eagle Katsina, ca. 1950s



"Walrus." Pen and ink drawing on sealskin, 1957

San Francisco residents Ruth and Charles de Young Elkus collected Native American art objects between the 1920s and early 1960s and donated their sizable collection to the Academy in 1972. Each section of the exhibit presents beautiful examples of craftwork that trace the development of 20th century markets for native crafts, highlighting artists whose works exemplify innovation and quality craftsmanship.

In Celebration of *A Thousand Cranes*

A new exhibition, ***A Thousand Cranes***, showcasing photographs by Taipei naturalist Wu Shao-Tung, opened at the Academy in January. The collection of fifty astonishing photographs on display through July 30 is sponsored by the Information Division of Taipei Economic and Cultural Office in San Francisco. Special guests at the Donor's opening included Mr. Wu and James Harris, director of the Crane Foundation.

Additional sponsors of ***A Thousand Cranes*** include Lite-on Cultural Foundation, National Culture and Arts Foundation, and the C.Y. Lin Cultural Foundation. The Academy is grateful for this support.

PHOTO: DONG LIN

Richard Bingham and Wu Shao-Tung

A THOUSAND CRANES

Photographs by Wu Shao-Tung

Through July 30

With my pictures of cranes,
I hope to enlighten and inspire people
to put greater efforts into environmental protection.
-Wu Shao-Tung

Wu Shao-Tung is a retired photojournalist who has spent the past eight years photographing and observing cranes from all over the world. His photographs convey a deep respect and appreciation of these graceful birds that have inhabited earth for the past 34 to 50 million years.

Conservation is one of the themes of Mr. Wu's work and of ***A Thousand Cranes***. Currently, many crane species are threatened by extinction largely as a result of the destruction of their habitats. Most cranes depend on wetlands for their survival, but loss and degradation of wetlands threaten their continued existence. By raising awareness of the cranes through his photographs, Mr. Wu hopes to stimulate efforts to conserve their habitats. The Academy hopes to broaden public awareness of the plight of cranes around the globe through this exhibit.

PHOTO: WU SHAO-TUNG

White-Naped Crane nibbles the base of a feather

Complementing the display is the Academy's rare Double Elephant *Birds of America* folio of James Audubon and jade and bronze cranes from the collections of the Asian Art Museum. Students of Jefferson School and other volunteers folded 1,000 paper cranes to hang from the ceiling of the gallery as a gesture of goodwill to visitors.

We invite you to visit the exhibit to learn more about these magnificent birds.

VENOMS:
An Exhibit In The Making

When officials at the Academy decided to create an exhibit about venomous animals, an extraordinary process began. Producing a large, dynamic exhibit requires the efforts of more than one-hundred Academy employees and volunteers. Although creating an exhibit of this magnitude can sometimes take years, the Academy has mounted this exhibit — from conceptualization to design to installation — in less than a year. The Academy's current and previous research on venomous animals helped to expedite this process.

A team was formed comprised of a project manager, aquatic biologist, exhibit developer, exhibit designer, evaluator, content experts, and educators. Their first task: determine the nature and scope of the exhibit. This required asking questions such as what messages the exhibit should send to visitors. How should the exhibit debunk stereotypes and myths about these animals? What kind of experience should the exhibit provide? Should visitors be frightened? Intrigued? Entertained? What types of exhibitry and activities would best help visitors learn about venom?

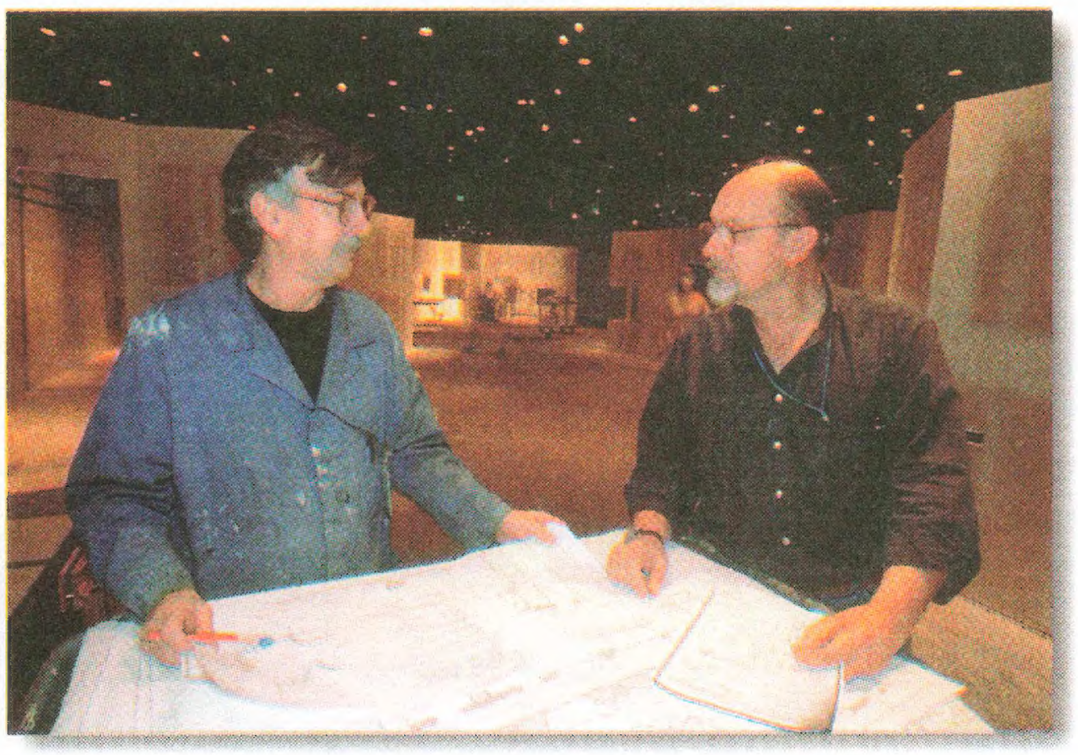


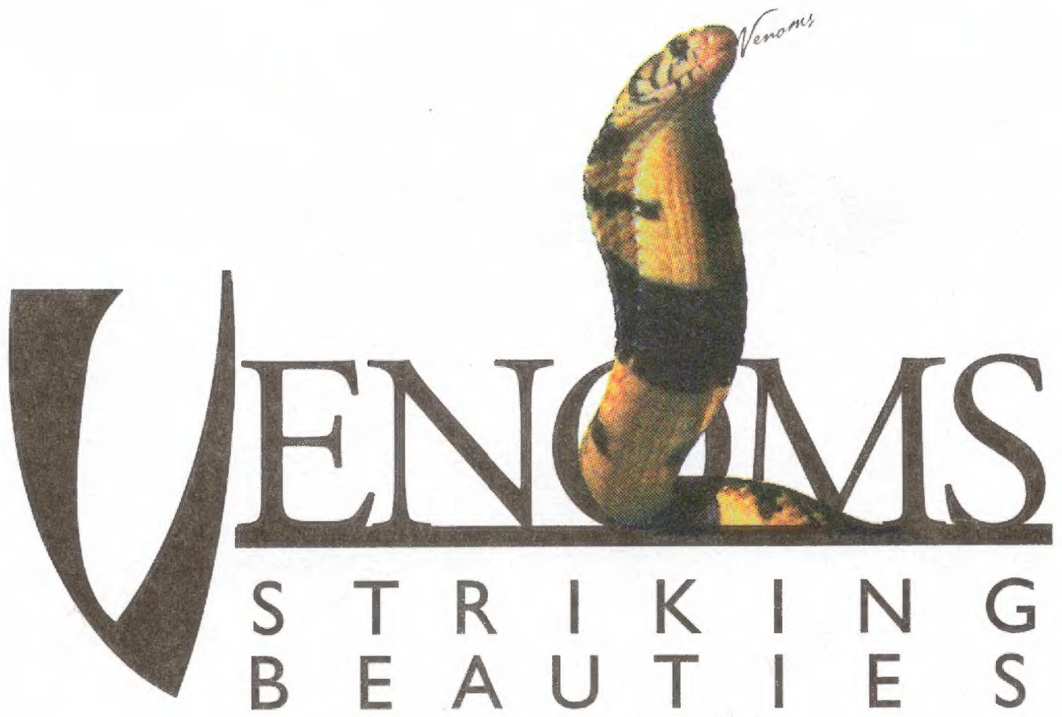
PHOTO: DONG LIN

Chris Fitting and Eric Johnson review plans for Venoms exhibit

As the team defined the exhibit's content, the appropriate animals were selected that would most effectively convey the exhibit's messages (and for which antivenom was available for the safety of staff). Then, the aquarium's biologists began collecting animals from around the world.

Once the live animals were selected, the design and production process began. Designers, preparators, engineers, cabinetmakers, electricians, and audio-visual and mechanical technicians, transferred the conceptual ideas into a physical reality. They addressed a wide range of issues such as the height of tanks for easy viewing by younger visitors to the technical elements of the interactives, such as the "venometer."

Colorful graphics and music completed the dramatic environment for this exhibit that is certain to intrigue every visitor.



Opening Wide March 25

Venom! The very word raises hairs on the back of your neck and simultaneously evokes fear and fascination. For many, the word conjures visions of rattlesnakes or tarantulas, but the variety of venomous species goes far beyond snakes and spiders.

PHOTO: DONG LIN

Velvet Ant (Wasp)

VENOMS: Striking Beauties, a heart stopping exhibit produced by the Academy, will bring you face-to-face with nearly thirty live, strikingly beautiful venomous animals. You'll learn that these animals use venom for survival – to catch their food and avoid becoming another animal's meal – as well as how venomous animals inject their dangerous doses, the effects of venom on victims, and behaviors used to advertise these lethal natures.

Using interactive challenges, test the speed and swiftness of your reaction time to snake strikes (a rattlesnake can strike in 1/25th of a second – faster than the blink of an eye), measure snakes' toxicity using a "venometer," or simply contemplate the extraordinary beauty of our live animals behind glass. Action packed videos throughout the exhibit show animal behavior. In the Venoms Theater, a variety of programs will offer safe opportunities to touch the stinger of a bat ray, feel the long spines of a scorpion fish, and more. ***Cobra Hunt,*** a National Geographic film featuring Academy Herpetologist Joe Slowinski's search for spitting cobras in Burma, will also be shown in the theater.

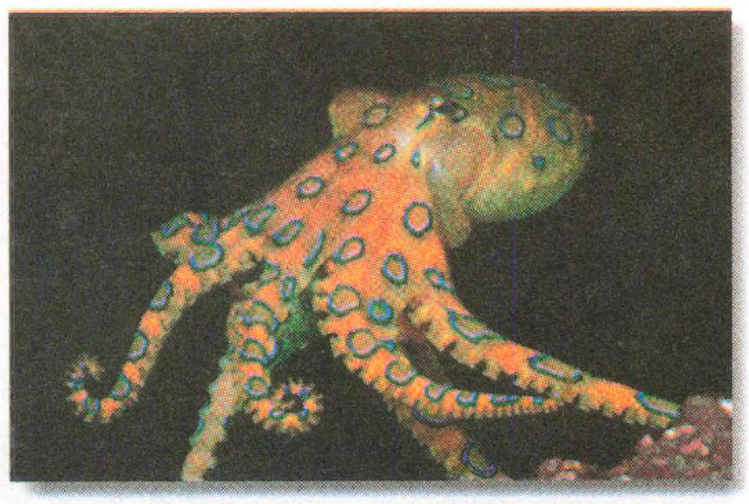


PHOTO: ROY CALDWELL

Blue-ringed octopus

We look forward to seeing you in the exhibit. You're sure to have a *killer* time!

PUBLIC PROGRAMS

Public Programs

A THOUSAND CRANES

Discover the fascinating natural and cultural history of cranes through hands-on activities, lectures and demonstrations. For the most up-to-date schedule, visit www.calacademy.org or call (415) 750-7159. All programs are free with museum admission.

Paper Crane Folding

Make your own crane to take home as origami artist Vicky Mihara Avery explains the cultural meaning of this traditional Japanese craft.

April 2, 29, May 7 & 21 11:30 am - 3:00 pm
A Thousand Cranes *Exhibit*

Crane-*ology*

Meet crane biologist Dr. Mini Nagendran and see some of the scientific tools and equipment she uses to study and care for these magnificent birds.

April 8, 12:30 pm
Goethe Room

Painting *"The Book of Cranes"*

See a live crane painting demonstration and hear the story of artist Clare Cooley, author of *The Book of Cranes*.

April 13 & May 20 12:30 - 3:00 pm
A Thousand Cranes *Exhibit*

Cranes in California

Explore the lives of the sand hill cranes of California through an interactive presentation by crane naturalist Bruce Foreman. This program is presented in collaboration with the California Department of Fish and Game.

May 28 11:30 am & 2:30 pm
Courtyard

PHOTO: WU SHAO-TUNG

Red-crowned crane

VENOMS STRIKING BEAUTIES

Explore the intriguing world of venom through live animal presentations, hands-on activities and lectures. For the most up-to-date schedule, visit www.calacademy.org or call (415) 750-7159. All programs will be held in the ***Striking Beauties*** exhibit and are free with museum admission.

Snake Foolery

Everyday is April Fool's Day for mountain king snakes and gopher snakes! Meet live snakes and decipher the pranks they play on nature.

Saturday April 1 12:30 & 2:30 pm

Let it Bee Venom

PHOTO: E.S. ROSS

Honey Bee

Meet a live colony of bees and learn about their venomous nature and behavior with U.C. Davis apiculturist Dr. Eric Mussen.

April 2, 30 & May 28 12:30 & 2:30 pm

Venoms and the Adaptive Radiation of Snakes

See Venoms Lecture Series, page 12

April 4 (Tuesday)

Striking Fishes

Touch the stinger of a bat ray, see a dangerous stonefish, and feel the long spines of a scorpion fish as we discover the secrets behind some of the most venomous fishes in the world.

April 4, 9, 22, May 20 & 30 1:00 pm

Dangerous Liaisons

Experience the extraordinary world of venomous insects and spiders through a hands-on presentation by the Insect Discovery Lab at San Francisco State University.

April 11, 27, May 10, 31 2:00 pm

Tarantula: Beauty or Beast?

Join us for a live tarantula presentation and discover the truth behind the fangs of these fuzzy arachnids.

April 19, May 21 12:30 & 2:30 pm

Rattlesnakes Alive!

Get up close and personal with a live Northern Pacific rattlesnake as naturalist Katie Colbert talks about their

intriguing habits in the Bay Area. Presented in conjunction with the East Bay Regional Park District.

Saturday April 22 12:30 & 2:30 pm

Studying Venomous Snakes

See a snake biologist in action and participate in an interactive presentation as we uncover the elusive world of venomous snakes.

May 14 12:30 & 2:30 pm

Black Widows To Go

Take home your very own benign black widow that you craft in this hands-on workshop. Learn to tell the difference between the venomous black widows and other spiders.

May 7 12:30 pm

PHOTO: DONG LIN

Female Black Widow Spider

Traditional Arts of the World

All programs take place at 1:00 pm on select Saturdays in the Morrison Auditorium, unless otherwise noted. Presentations are free after general museum admission. For further information on these and other Traditional Arts Programs, contact Dr. Jennifer Michael in the Anthropology Department at (415) 750-7165. The Traditional Arts Program is funded by the Paul L. and Phyllis Wattis Foundation.

April 1—Turkish Silk Weaving

Gülizar Baggson will demonstrate and discuss the process of weaving a silk carpet on a traditional Turkish loom.

April 8—Colombian Folk Dance

Accompanied by live music, Beatriz Restrepo and the Colombian Ethnic Dance Project present a program of regional dances from Colombia.

April 15—European Lace-Making

Cathy Belleville and other artists from Sunnyvale's Lace Museum demonstrate several styles of lace-making and discuss the history of this craft.

May 6—Traditional Arts from Tonga

Women from the local Tongan community will demonstrate a sampling of traditional arts from this Pacific island nation, woven leis, traditional costumes, and Tongan music and dance. This is a special program in honor of Asian/Pacific Heritage Month. (12:00 pm)

Special Sunday Program
May 14—Japanese Mochi Pounding Ceremony

Members of Kagami Kai will demonstrate the traditional Japanese practice of *mochitsuki* (*mochi* pounding). Mochi, a paste made from glutinous or "sweet" rice, is prepared and eaten in Japan on certain festive occasions. This is a special program in honor of Asian/Pacific Heritage Month.

Courtyard

Many thanks to the following members who have increased their support of the Academy and its Annual Fund in the last two months:

Daniel & Mabel Abellera
Mr. Michael Anthenien
Mr. Richard Bachenheimer
Paul Bartlett & Yumi Nakagawa
Betty B. Blomberg
John & Kathryn Blum
Spencer & Tracy Brog
Ms. Ava Brumbaum
Robert & Katherine Burke
Joseph & Joanne Coffin
Bruce & Eve Cohen
Francis & Erin Collins
Bruce & Suzanne Crocker
Royda Crosland & David Parker
Ms. Carol Donohoe
Ms. Isabelle Dokouzian
Mr. David M. Eakin
Jack & Mary Ellen Easby
Ronald & Allison Espeseth
Irwin & Concepcion Federman
Doug & Melissa Fletcher
Robert & Michelle Friend
Robert & Chandra Friese
George & Evelyn Gara
Mr. Thomas Gerughty
Alan & Susan Greinetz
David & Lisa Gruber
Mr. & Mrs. Robert C. Harris
Dennis Hartzell & Sheila Fifer
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Mr. Reid McNally
Dr. Joseph Melichar
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Mr. Roger Montgomery
Debra Niemann & David Brodwin
Merlin & Mildred Nygren
Pierre & Marianne Pelet
Jay & Lisa Pierrepont
Ms. Cynthia Plevin
Gary & Lynne Price
Ursula E. Ralph
Mr. John Romero
Mr. Paul Sack
Ted & Lorraine Schapp
Gene & Carol Shafton
Pam & Jonathan Shields
Ms. Suzanne Shippey
Rich Shrieve & Yvonne Don
Eric Sullivan & Teri Steele
Mrs. Maureen Sullivan
Mr. & Mrs. John C. Thoelecke
R. V. & Kathleen Varney
Raymond & Clare White
Dr. Jean Wildberg
Frankie Wu

Earth Day 2000

Celebrate the Diversity of Life — Earth Day At The Academy April 22, 23

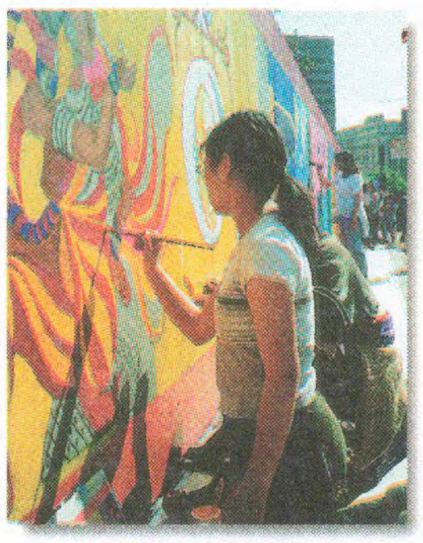
All programs are free for members. For more information call (415) 750-7145 or visit www.calacademy.org.

Bike or Bus – Free Admission

Come by bicycle or public transit to the Academy on the 22nd & 23rd and enjoy free museum admission. Cyclists will have a free, secure bicycle check service at the front entrance to the Academy courtesy of the San Francisco Bicycle Coalition.

Saturday, April 22

Academy Mural Project



COURTESY: PRECITA EYES MURAL ARTS CENTER

In celebration of Earth Day, Precita Eyes Mural Arts Center will design a mural. Visitors are invited to grab a paintbrush and join in the fun. For those who wish to express their own creative spirit, there will also be a free-form mural project for all ages. Smocks provided.

1:00 pm, Courtyard.

The Science of Soil

The San Francisco League of Urban Gardeners (SLUG) will offer soil composting demonstrations. Understand how kitchen waste, worms and other soil creatures can produce healthy, nutrient rich soil.

All Day in the Main Courtyard.

Diversity of Life

Take a museum tour to experience the amazing diversity of life through the museum's exhibitions. Learn what biodiversity is, why it is important, and the role science plays in conservation.

Tours depart from the information desk. Also offered on Sunday 10:30 & 11:30 am, 1:00 & 2:00 pm

Endangered Raptors

Meet a live peregrine falcon and learn how scientists are protecting magnificent raptors in California. Presented in conjunction with the Predatory Bird Research Group from the University of California, Santa Cruz.

11:30 am & 3:00 pm, Goethe Room

Cranes of the World

Special lecture with Dr. George Archibald
Director and co-founder, International Crane Foundation

Dr. Archibald is known to most people as the man who amazingly bred "Tex," the female whooping crane, by performing a courtship dance himself. He is considered the world's leading expert on cranes, and travels the world studying them and working on crane conservation projects. In 1972 he discovered unknown nesting grounds for the red-crowned crane in Hokkaido, Japan and achieved the conservation of their breeding habitat with direct support from Japan's Royal Family. He is also the mastermind behind an extensive international program to save the highly endangered Siberian crane.

PHOTO: DAVID THOMPSON

Dr. George Archibald dancing with female Siberian Crane, Tanya

2:00 pm, Free with Academy Admission
7:00 pm, members free/$5 non-members, Auditorium

Stories of the Earth

Storyteller Mary Ellen Hill will tell the scientific story of the earth's beginnings interwoven with creation myths from Asian, African, and Native American cultures. Her performances are enhanced by poetry, song and sign language. This program is suitable for all ages.

11 am, African Annex. Also offered at 1:30 pm on Sunday

Rattlesnakes Alive!: see description page 6

Striking Fishes: see description page 6

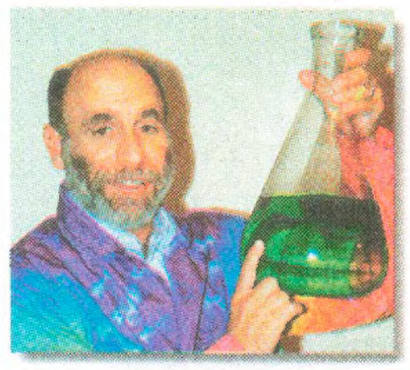
Sunday, April 23

I'm from Planet Earth and you gotta show me!

Dr. Art's Planet Earth Show combines exciting scientific demonstrations with audience participation.

Free Book Giveaway for Members!

Dr. Art is a scientist who has playfully labored the past twenty years in developing innovative methods to teach environmental and scientific concepts in ways that are meaningful, effective and fun!



Dr. Art

Show your membership badge to receive a copy of Art Sussman's new book, *Dr. Art's Guide to Planet Earth, For Earthlings Ages12-120*.

2:00 pm, Auditorium

Animals of the Earth

See a live alligator, observe a California desert tortoise and learn how to help the animals of the earth. Presented in conjunction with the San Francisco Zoo.

11:15 am & 1:00 pm, Goethe Room

"Every Act is an Ecological Act."

George Schaller

Eco-Resolutions for a New Century

On this 30th anniversary of Earth Day, it is clear that the planet is facing serious environmental challenges: non-sustainable consumption of resources, species extinctions, pollution, habitat loss, and introduction of invasive species into new areas are all occurring at alarming rates.

The good news is that much can be and is being done to address these problems at local, regional, national and international levels by individuals, interest groups, agencies and institutions such as ours. The infrastructure exists for each of us to take action. As an individual, you can educate yourself on the issues, get involved, and spread the word. As a scientific institution, the California Academy of Sciences is carrying out the research essential for understanding the Earth's needs, and providing educational opportunities for more people to be informed on the issues.

PHOTOS: DONG LIN AND NASA

Every Day is Earth Day at the California Academy of Sciences.

Acting Globally:
California Academy of Sciences

Understanding environmental changes requires comprehensive knowledge of the diversity of life on earth. Scientists at the California Academy of Sciences conduct research, documenting what species populations are threatened, extinct, and thriving. These efforts provide the basis for wildlife conservation work, allowing decisions and predictions to be made about how to manage habitats and resources effectively.

Other research includes captive breeding programs of rare, threatened, or endangered species to help ensure their survival and reduce pressure on their populations in the wild. Educational programs offered by the Academy, such as public lectures, youth and adult classes, the outreach program, and the training of docents—our volunteer guides—focus on the themes of understanding and conserving the diversity of life

continued on pg. S2

Acting Locally:
42 Things You Can Do to Help Make the Bay Area a Sustainable Community

Here are a few simple actions you can take at home, in your neighborhood or community to make a difference and to ensure that future generations—of people, plants and wildlife—can continue to inhabit and enjoy the Bay Area.

How does your garden grow?

1. Never use the nasty, toxic stuff to kill insects and other pests in your garden or around your home. Diazinon—a general-purpose insecticide found in many commonly used garden products—is often present in the Bay and local streams at levels lethal to aquatic organisms.

continued on pg. S3

around us. Through its main library and the Biodiversity Resource Center, the California Academy of Sciences provides free public access to environmental materials, from print to videos to curricula to internet access (www.calacademy.org/research/library/).

California Academy of Sciences' Conservation Research Activities

Regional and National

- Updating and enhancing a complete description of all the flowering plants of Marin and San Francisco counties.
- Inventorying the plants of Modoc County and creating a database for easy dissemination and use.
- Applying Geographic Information Systems technology to recent and historical collections to monitor amphibian populations in San Mateo County and the Sierra Nevada.
- Monitoring the health of our nation's rivers through the study of diatom (microscopic algae) populations.
- Conducting regional surveys for the U.S. Forest Service to document distribution of rare and endangered reptiles and amphibians.

International

- Surveying the flora and fauna of Burma, Papua New Guinea, Madagascar, and Yunnan, China.
- Collaborating with the National Institute of Biodiversity of Costa Rica to conduct surveys of diversity in Costa Rican Conservation Areas and to train their scientists.
- Training local staff and developing conservation strategies in Ranomafana National Park, Madagascar.
- Documenting the diversity of microbial communities in Lake Baikal, Russia.
- Repatriating data from our botanical and entomological collections to help Mexico understand and preserve its flora and fauna.

The Mountain Lake Project

Mountain Lake, in San Francisco's Presidio, is the only natural freshwater lake in San Francisco. It is a classic example of a natural ecosystem heavily impacted by human activity. It is bordered by a major highway, a golf course and a high-density residential area. It suffers from run-off pollution of fuel and pesticides, and has invasive non-native species. Yet it also harbors remnant native populations of plants and animals, provides resting and feeding areas for migratory birds, and is a much-loved park.

The California Academy of Sciences is spearheading an effort to inventory the species that live in the lake and in the immediate surrounding area, and will monitor the changes that occur in species and water quality as the lake undergoes restoration efforts. The monitoring, done by school groups and volunteers, provides an exciting opportunity for "citizen scientists" to gain field research experience and become informed and involved in a resource restoration and management project.

The Winter-Run Salmon Project

Hatched in cool, freshwater streams, salmon spend the first year of their lives migrating downstream to the ocean. During this time, phenomenal physiological changes occur that allow the fish to survive the transition from fresh to salt water. After spending 3-5 years at sea, the salmon again undergo physiological changes and return to their exact natal stream to spawn, a journey of up to 500 miles in length and up to 8,000 feet in elevation. Pacific salmon spawn once and then die. Not only do salmon play important dietary and cultural roles for humans, but they also play a critical role in stream ecosystems, providing nutrients directly to predators and scavengers, and indirectly returning literally tons of nutrients to the ecosystem through decomposition. Dams, pollution and habitat degradation have taken a serious toll on wild salmon populations. For example, in the early 1960s, approximately 120,000 winter-run chinook salmon were counted on the Sacramento River. By 1991 the number had dropped to 119.

PHOTO: CHARLOTTE FIORITO

Endangered Winter-run chinook salmon in Steinhart Aquarium.

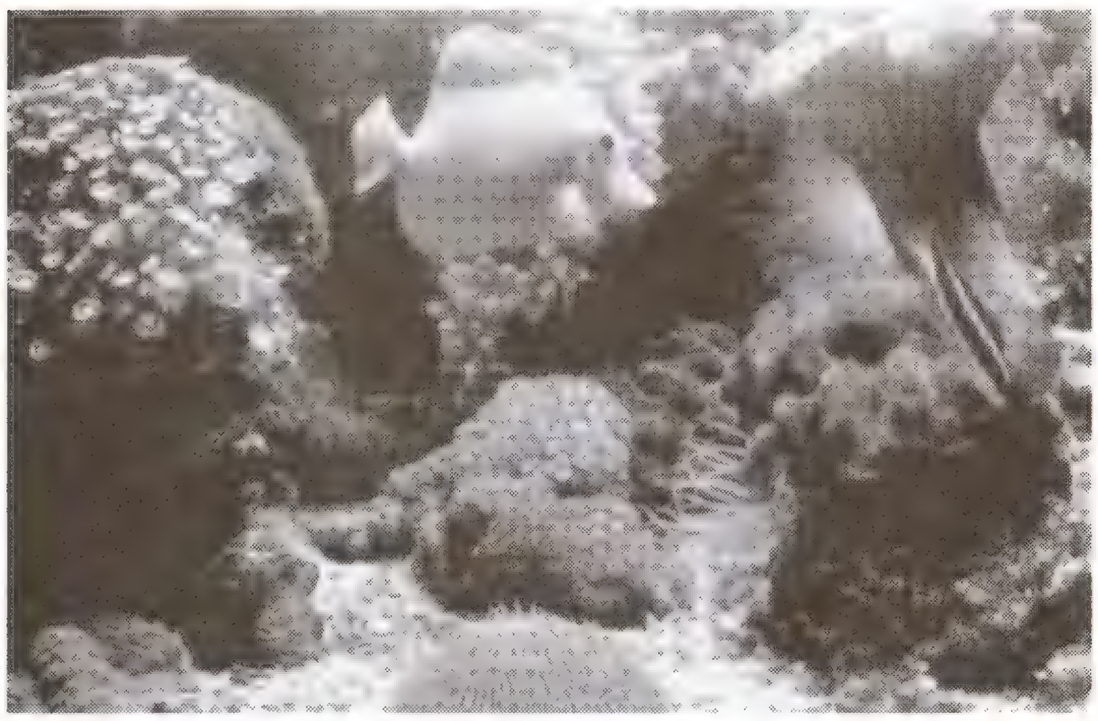
The Academy of Sciences, in collaboration with UC Bodega Marine Lab (BML) and the Coleman National Fish Hatchery (CNFH) initiated the Winter-Run Chinook Salmon Captive Broodstock Program to provide an insurance policy against extinction. Each year, 25 wild salmon are trapped and spawned at CNFH, and each year approximately 500 of the progeny are raised at the Academy's Steinhart Aquarium and another 500 at BML. When the fish at the Academy reach sexual maturity, they are returned to BML for spawning. DNA analysis and a computerized database allow the researchers to maximize genetic diversity in the stock. The fertilized eggs are shipped from BML to CNFH where they are released into a tributary of the Sacramento River after reaching the young fry stage. This project was the first to successfully raise winter-run salmon through their complete life cycle.

The Academy is also involved in other breeding programs of endangered species, including Californian and Mexican desert pupfish, cyclids, and black-footed pengiuns.

Coral Reefs

Coral reefs are the aquatic equivalents of rainforests. They are ecosystems that support the greatest richness of marine species. Academy scientists are conducting inventories of the world's coral reefs and documenting the diversity of species found in these tropical regions. They describe recently discovered species. In addition to this fundamental research, they conduct important work to preserve what they discover.

Curators John McCosker, Gary Williams, and Terry Gosliner are working with scientists at Conservation International to document hotspots of coral reef diversity and identify these regions as areas of special concern for preservation. Academy scientists are also working closely with biologists from the Bureau of Fisheries and Aquatic Resources in the Philippines. Filipino biologists have worked at the Academy to gain additional training and knowledge about the marine fauna of their native coral reefs. This collaboration has resulted in recent passage of stronger laws for the protection of the giant clam species that inhabit their coral reefs.



Steinhart Aquarium runs a series of breeding programs of tropical fish and other marine animals, including sea horses, cardinal fish, and clownfish to relieve pressure on coral reefs from commercial collectors.

Volunteer at the California Academy of Sciences. Become a docent. Help in the Research Departments. Call Rosalind Henning 415/750-7154.

Take advantage of the educational resources at the California Academy of Sciences. Sign up for classes, lectures, and field trips. Visit our exhibits, library, and Biodiversity Resource Center. Call 415/750-7145. Or see www.calacademy/org.

KIDS ONLY

Kids, try out the website www.actionfornature.org and link up with other kids around the world who are interested in nature and who are working to help the environment.

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continued from pg. S1

PHOTO: AQUATIC OUTREACH INSTITUTE

Students from Martin Luther King Middle School in Berkeley plant garden produce and native plants.

2. Garden with native plants. Natives require minimal watering, most need little or no chemical maintenance, and they provide the best habitat for native wildlife—including the all-important insects. (Chemicals often end up polluting local creeks and the Bay.) Avoid invasive non-natives such as broom, acacia, and ice plant. Most Bay Area nurseries have "native" sections. Visit Strybing Arboretum in Golden Gate Park, the Regional Parks Botanical Garden in Tilden Park, and UC Berkeley's Botanical Garden to view native plants. Add plants that have natural insecticidal qualities, such as native mints, sage, and lavender which deter certain pest insects.
3. Garden the old-fashioned way: weed as much as possible by hand; it's easiest in early spring when the soil is still moist. A thick layer of mulch also helps keep weeds under control. Weed-wackers use energy and spread seeds making weeds worse next year. If you must use chemicals, use less toxic products, such as insecticidal soap or horticultural oil—both commonly available. (You can also make your own using one teaspoon dishwashing liquid per gallon of water.)
4. Handpick snails, or use the new, non-toxic products designed specifically for slugs and snails. Traditional snail poisons can harm pets and wildlife. Learn to recognize native slugs and leave them alone.

PHOTO: NEIL E. FAHY

Native snail *Helminthoglypta stiversiana*

5. In California, no resource is more precious than water. Twenty million people rely on the San Francisco Bay Estuary watershed for drinking water, and millions of

birds, fish, and other animals also rely on water for feeding, resting, and nesting. But, as humans have infringed upon their habitat, over 90 species of insects, amphibians, reptiles, birds, and mammals in the Estuary have become threatened or endangered. To preserve the key ingredient in the web of life, all of us need to get involved. Install a drip-irrigation system, or water your garden by hand. Both of these methods use less water and are more precise than sprinklers. Always water early in the day or in the evening when less water is lost to evaporation.

6. Replace parts of your lawn or garden with native shrubs, grasses, or wildflowers. They attract butterflies and beneficial insects that prey on unwanted pests. Larner's Seeds (415/868-9407) has reliable native plant seeds. Many other commercial packages are unreliable.

7. Turn food wastes into black gold for your garden. In your composter, coffee grounds, eggshells, and all kinds of food and yard waste will decompose and, turn to fertilizer—and soil—for your yard. It's a myth that composting smells: done correctly—turning the compost enough—there is no odor. To avoid attracting pests, do not compost meat or animal fat or wastes.

PHOTO: SLUG

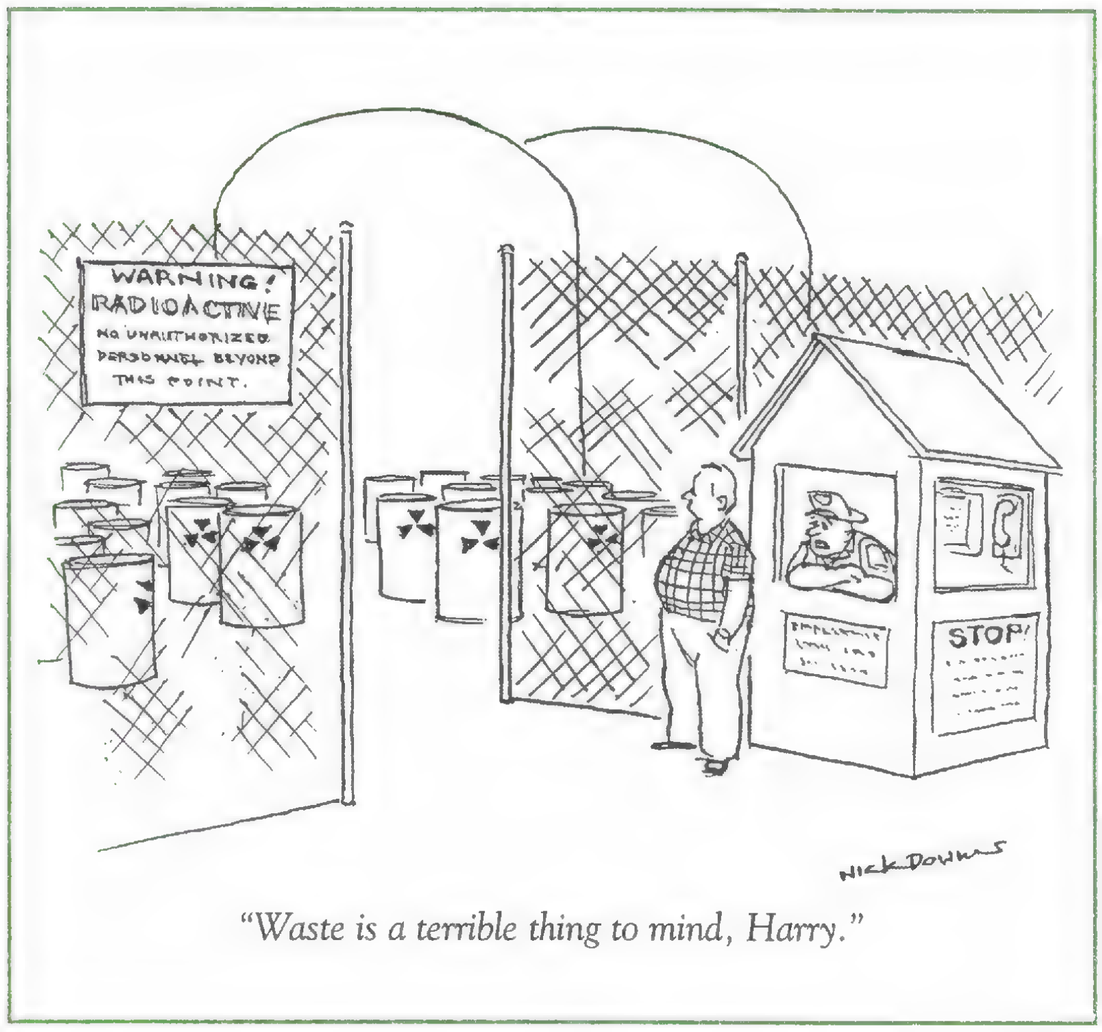
San Francisco League of Urban Gardeners (SLUG) offers composting and gardening workshops.

San Francisco League of Urban Gardeners (SLUG) (415/285-7584) offers ongoing composting and gardening workshops as well as a free series of Saturday classes beginning in September. They can also direct you to city-subsidized (inexpensive) composting bins. See their web site at www.slug-sf.org.

8. Grow some of your own food, (it reduces transportation costs, and fossil-fuel consumption). Even apartment dwellers can grow lettuce, bell peppers, or squash on balconies.

9. Start or join a community garden group in your neighborhood (there are over 60 in San Francisco alone!). For information—and a great map—call CUESA (Center for Urban Education about Sustainable Agriculture) at 415/981-3004; www.igc.org/cuesa.

10. Plant a native tree (oak, bay, buckeye, etc.). Not only is it fun, but trees help filter our air by absorbing carbon dioxide and pollutants in the process of photosynthesis. San Francisco's Friends of the Urban Forest needs volunteers



"Waste is a terrible thing to mind, Harry."

to help with Saturday tree plantings, tree maintenance, and office work. Call 415/543-5000 or visit www.fuf.net.

Visit the Academy of Sciences Biodiversity Resource Center (www.calacademy.org/research/library/biodiv/biodiv.htm) to learn more about native plants. California Native Plant Society (916/447-2677) or www.cnps.org offers volunteer opportunities with the San Francisco, San Mateo, East Bay, or Marin chapters. Most water districts—EBMUD (510/287-0590) and Marin Municipal Water District (415/924-4600)—have demonstration low water-use or native plant gardens.

Raining Cats and Dogs

11. *Have your cat neutered and keep it indoors.* Cats kill millions of songbirds every year. Check out the American Bird Conservancy's website www.abcbirds.org

12. Scoop up poop! Prevent the spread of bacteria and parasites. Some can be transmitted to wildlife.

Home, Sweeter Home

13. Conserve water even in non-drought years. Replace old, leaky toilets. Or add one or two half-gallon bottles to your old toilet's tank. When brushing teeth, rinsing dishes, etc. turn off the faucet when you're not actually using the water.

14. Machine-wash only full loads of laundry or dishes. If you are buying a new washer, consider one of the new, low water, low energy-use, compact horizontal washing machines.

15. Don't pour paints, paint thinners, or other solvents into the sink or toilet. Take them to your city or county's hazardous waste disposal center; many agencies now offer special household hazardous waste pickup days (call your city or county public works department for more information). If oil leaks or is spilled onto your driveway, don't hose it down (it will end up in the Bay). Use sawdust or kitty litter to absorb the spill.

The San Francisco Estuary Project offers educational resources and opportunities on wetlands, wildlife, aquatic resources, and land use, and publishes ESTUARY, a newsletter that serves as an information clearinghouse (510/622-2321 or www.abag.ca.gov/bayarea/sfep).

16. Reduce, reuse, and recycle... the three "R"'s. American consumers each produce, on average, 1,500 pounds of garbage per year! Don't buy—or collect—what you don't need. And when you're finished with something, consider selling it or donating it. Take it to a resale place like Urban Ore (510/559-4460), Goodwill Industries (415/575-2100) or the Salvation Army (800/958-7825).

    Urban Ore accepts building materials, as does Building Resources, in San Francisco run by the non-profit San Francisco Community Recyclers (415/731-6720). Call the Berkeley Ecology Center's recycling hotline (510/527-5555), the California Environmental Hotline (1-800-CLEANUP), San Francisco's Recycling Hotline (415/554-3400), or www.sfrecycle.org

SAN FRANCISCO RECYCLING

San Francisco Recycling plant recycles 216 tons of aluminum each year.

Not More Paper

17. The more uses you can get out of something before throwing it away, the more you avoid the environmental costs of producing replacements. This is especially true with paper: use both sides whenever possible. Buy recycled paper whenever possible. Re-use envelopes. The non-profit Oakland Recycling Association (510/444-8633) sells mailing labels that can be applied over old labels. Despite all of the recycling efforts, paper and cardboard still make up most of what goes into our landfills.

What makes up our landfills, by volume?

Paper and cardboard:	38%
Yard waste:	11%
Metal:	14%
Clothing, fabric:	13%
Food waste:	4%
Other:	20%

18. Avoid junk mail by writing to the Direct Marketing Association's Mail Preference Service. This free service places your name in a "suppress" file for five years. Send all variations of your name and address to: Mail Preference Service, Direct Marketing Association, P.O. Box 9008, Farmingdale, NY 11735-9008.

Too Much Trash

19. Disposable diapers are clogging our landfills. Buy cloth diapers, sign up for a diaper service, or give friends with infants a gift certificate to a diaper service.

20. Buy recyclable plastics. Plastics numbered 1 and 2 (PET and HDPE) are readily accepted for recycling.

21. Purchase products with less packaging. Avoid buying single-serving-type containers.

22. Old computers can be reused and recycled. Berkeley Neighborhood Computers (510/845-5757) is a non-profit dedicated to increasing computer education and access that accepts old computers for refurbishing and reuse. Alliance Metals (510/547-2408) in Oakland accepts computers and salvages valuable parts.

Eat Like There's a Tomorrow

23. Buy organic when you can. You'll avoid the environmental

House of Birds

When you enter Juanita Heinemann's home, you hear them before you see them—the birds, that is. And when you enter the "bird room"—an immaculate, former dining room—you are suddenly surrounded by whirring, jumping, chirping, flying feathered creatures, contained in cages and baskets of all sizes. Heinemann rehabilitates injured songbirds, and has developed a specialty in saving the most delicate: hummingbirds, bushtits, and the like. These birds require more time and care than, say, a jay, so many wildlife rehab centers around the Bay now send them to Heinemann.

Heinemann began her volunteer work as a rehabilitator when she found a robin that had been shot with a BB gun. When a vet recommended euthanizing the bird, Heinemann took it to Palo Alto's Wildlife Rescue, Inc. for a second opinion. That bird wasn't saved, but it motivated Heinemann to take classes and get the necessary permits to rehabilitate birds in her home.

Despite her hectic lifestyle—particularly in spring and summer—Heinemann tries to share her knowledge with local garden clubs. "What you do in your garden affects the hawk in the sky and any animal that enters your garden or feeds in it," she explains. "People use insecticides and end up harming the very birds that could solve their problems." While the intensive nature of rehab work isn't for everyone, Heinemann suggests that everyone can help a little by planting native gardens.

impacts of chemical pesticides and fertilizers and increase demand for organic produce—which will lower prices.

24. Eat low on the food chain. Try to cut back on meat. Beef production is an energy-intensive process, requiring an enormous fossil fuel subsidy to clear land for pasture, to plant, harvest, and cultivate those crops, and to produce and apply fertilizers and pesticides. Cattle consume 15 pounds of grain per pound of edible beef. In California, the water used to irrigate pastures could meet the domestic needs of 22 million people. Many fast food chains buy beef from tropical countries, where irreplacable rainforests are cleared to graze cattle.
25. Avoid beleaguered seafood species such as swordfish, orange roughy, grouper, Atlantic cod, haddock, yellowtail, flounder, monkfish, scallops, and snapper. Populations of these fish are dangerously low. Best choices: albacore, calamari, catfish, farmed trout and bass, Alaskan salmon.
26. Drink shade-grown coffee. Songbirds need the forested environment of traditional shade-grown coffee farms as habitat. When grown in plantation settings in full-sun, the coffee plants require more chemicals and the birds lose habitat. Thanksgiving Coffee Company carries shade-grown coffee: 800/648-6491 (www.thanksgivingcoffee.com).

Two Legs, Two Wheels

27. Drive less. Use a fuel-efficient vehicle, and keep it tuned. Production of greenhouse gases is the major cause of global warming. Toxics from tailpipe emissions pollute the air. Children's lungs are more affected by air pollution. Asbestos from brake-pad linings and heavy metals ends up in the Bay.
28. Walk and bike more: you'll feel better. Contact the San Francisco Bicycle Coalition (415/431-2453 or www.sfbike.org); the East Bay Bicycle Coalition (510/433-7433), or the Marin County Bicycle Coalition (415/488-1245) for more information and route maps.

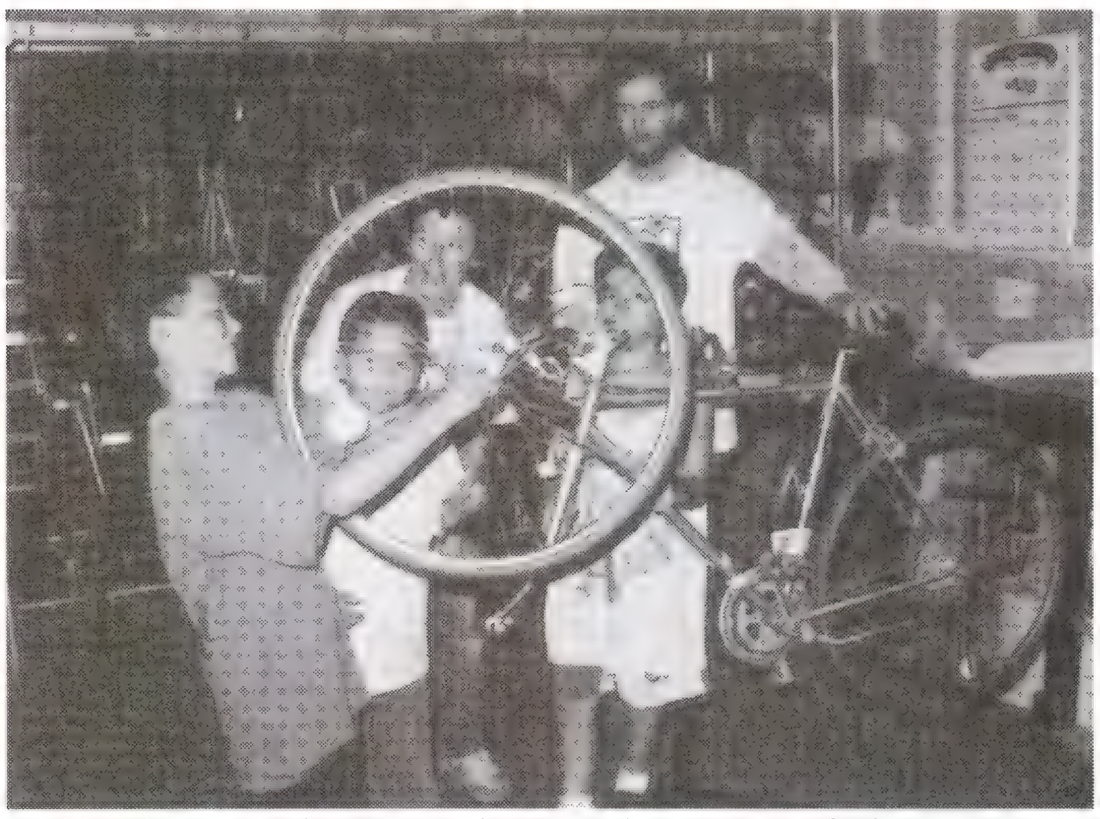


PHOTO: MARTIN PECKINS/STEVE PEIXOTTO

Children learn bicycle repair at the Re-Cyclery in San Rafael.

29. Join a carpool, and use public transit. While driving, you breath nitrogen oxide, carbon monoxide, and hydrocarbons at concentrations ten times higher than ambient urban levels. Concentrations are much lower in the carpool lane during rush hour. Call 800/755-POOL to find out about carpools. For information on air quality, call California Air Resources Board at 916/322-2990. The California Academy of Sciences offers incentives to encourage employees not to drive in single occupant cars. (Call 415/750-7211 for a copy of our policy.) Suggest to your employers that they do the same.
30. If you must drive, combine lots of little errands into one trip to avoid the extra pollution caused by many cold starts.
31. Use less soap when you wash your car (soap adds excess nutrients to the Bay). Wash your car over grass or gravel so the runoff is filtered. Recycle used motor oil and antifreeze. Place them in strong containers and take them to a gas station or collection center (most auto centers accept used motor oil, or call RIDES at 800/CLEANUP or visit www.rides.org for a collection center).

As Big as all Outdoors

32. Adopt your neighborhood, community, or regional park. In San Francisco, call Friends of Recreation and Parks for information about volunteering in Golden Gate Park as well as San Francisco's many neighborhood parks: 415/750-5220 and www.frp.org.
33. Get to know your local creek. Wherever you live, you are in a stream's watershed. The Bay Area is ribboned by thousands of waterways, from rivers to tiny, seasonal creeks (for a creek near you, see the Oakland Museum's website at www.museumca.org/creeks). Although large sections of many urban creeks now flow underground, several organizations are working to save what's left, or bring them back above ground. In the Bay Area, almost every tiny creek has a "Friends of" group working to save it—from creek cleanups to full-fledged restoration projects.

For more information on your watershed and the creek group in your area, contact the Urban Creeks Council in Berkeley (510/540-6669) or the Aquatic Outreach Institute (AOI) in Richmond (510/231-9507). Each of these non-profits maintains lists of active creek groups. They also need help. AOI also offers workshops for teachers that focus on preventing Bay pollution and restoration: Kids in Creeks, Kids in Gardens, and kids in Marshes.

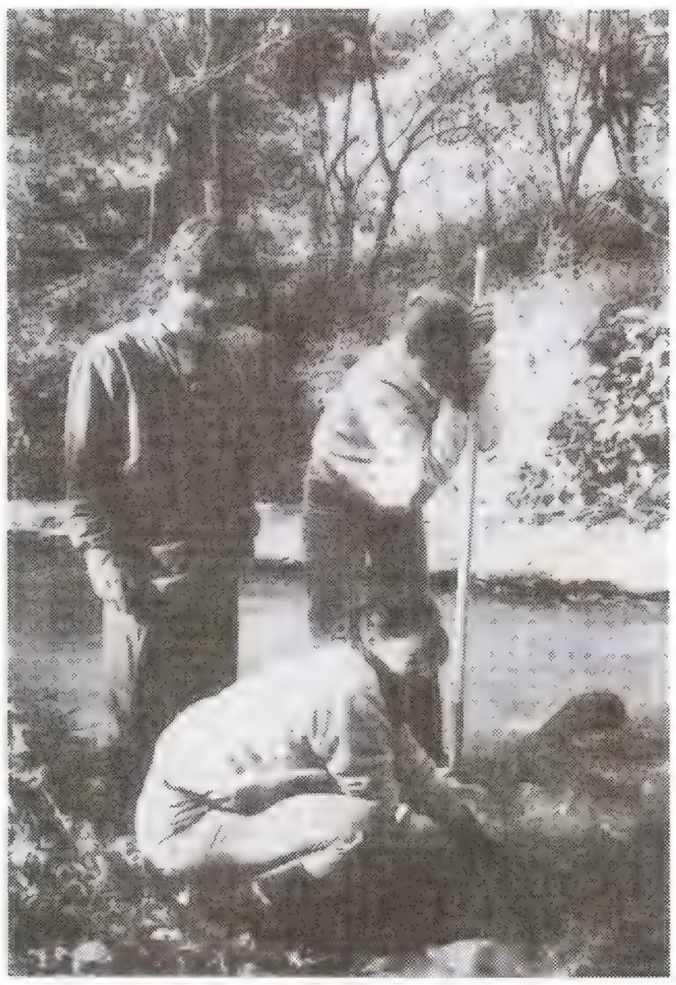


PHOTO: AQUATIC OUTREACH INSTITUTE

Friends of Sausal Creek in Oakland monitor water quality, aquatic insects and plant natives.

34. On the water, pick up trash when you can, especially fishing

Environmental Artist

In addition to coordinating the Wild City! environmental education outreach program for the California Academy of Sciences, Zakary Zide is an environmental artist.

Inspired by place, space and time, Zide works with natural materials such as seeds, boulders, leaves, and water to create aesthetically pleasing and thought-provoking sculptures. But for Zide, the significance of his art comes more from the creative process than from the finished product. "My own life has been a pattern of events and developments which I see echoed in the earth and in the sculptures that I make. Each work is a cycle: it grows in the making, evolves, reaches its peak, and eventually collapses and decays. Each work is like a little ecological model."

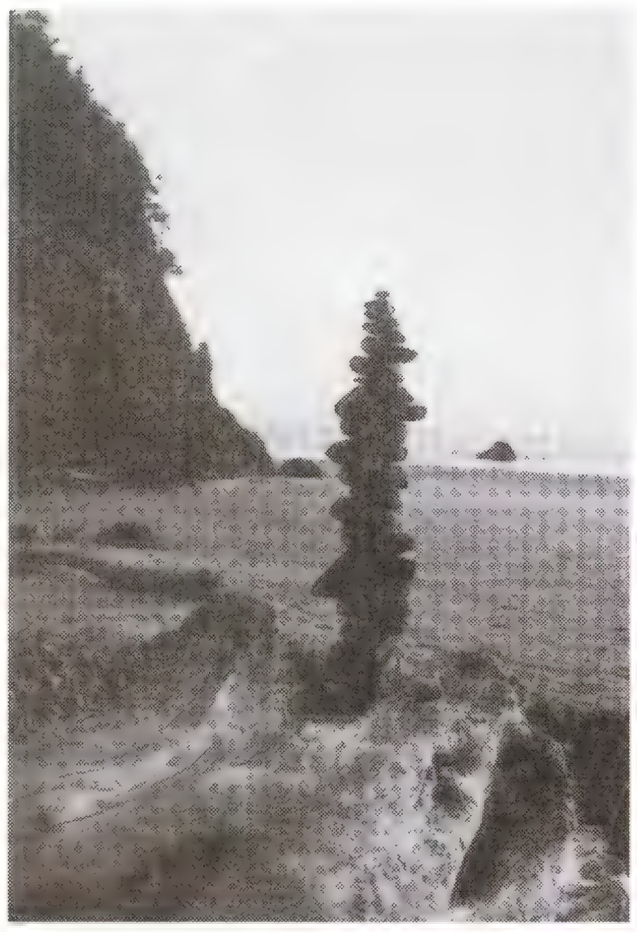


PHOTO: ZAKARY ZIDE

One of Zakary Zide's ephemeral art works.

Zide asserts that because the very nature of ecological art gets participants purposefully and physically interacting with their environment, they cannot help but become actively aware of their relationship with the earth and its elements.

line and plastic debris that can injure wildlife. Avoid buying, or cut up, six-pack rings before disposing of them. Report polluters. For pollution in the Bay, call BayKeeper at 800/KEEPBAY (email: keepbay@sfbaykeeper.org). To report poaching, creek pollution, habitat destruction, and fish or bird kills, call the California Department of Fish and Game Hotline at 800/952-5400.

35. If you have a boat, use sewage pump-out stations, and recycle your used oil. A weekend boater flushing untreated sewage into the Bay produces the same amount of bacterial pollution as that of 10,000 people whose sewage passes through a treatment plant. Just 4-6 quarts of oil can produce an 8-acre oil slick. For a map of the Bay's pump-out stations, call the San Francisco Estuary Project at 510/622-2406.

36. Do something to help wildlife. Volunteer at a wildlife rehabilitation center. Your hands will be put to good use, and you'll have the opportunity to see some incredible creatures close-up. In San Francisco, take injured animals to Animal Care and Control (415/554-6364), or to one of the following centers:

    Lindsay Museum 1931 First Avenue Walnut Creek, CA 925/935-1978 www.wildlife-museum.org. Call Wildcare: Terwiliger Nature Education and Wildlife Rehabilitation in San Rafael 415/456-SAVE.

    Do not approach a stranded or injured marine mammal. Call the Marine Mammal Center, 415/289-SEAL. Volunteers are needed for animal husbandry and lab work, rescue operations, and general administration. See www.tmmc.org.

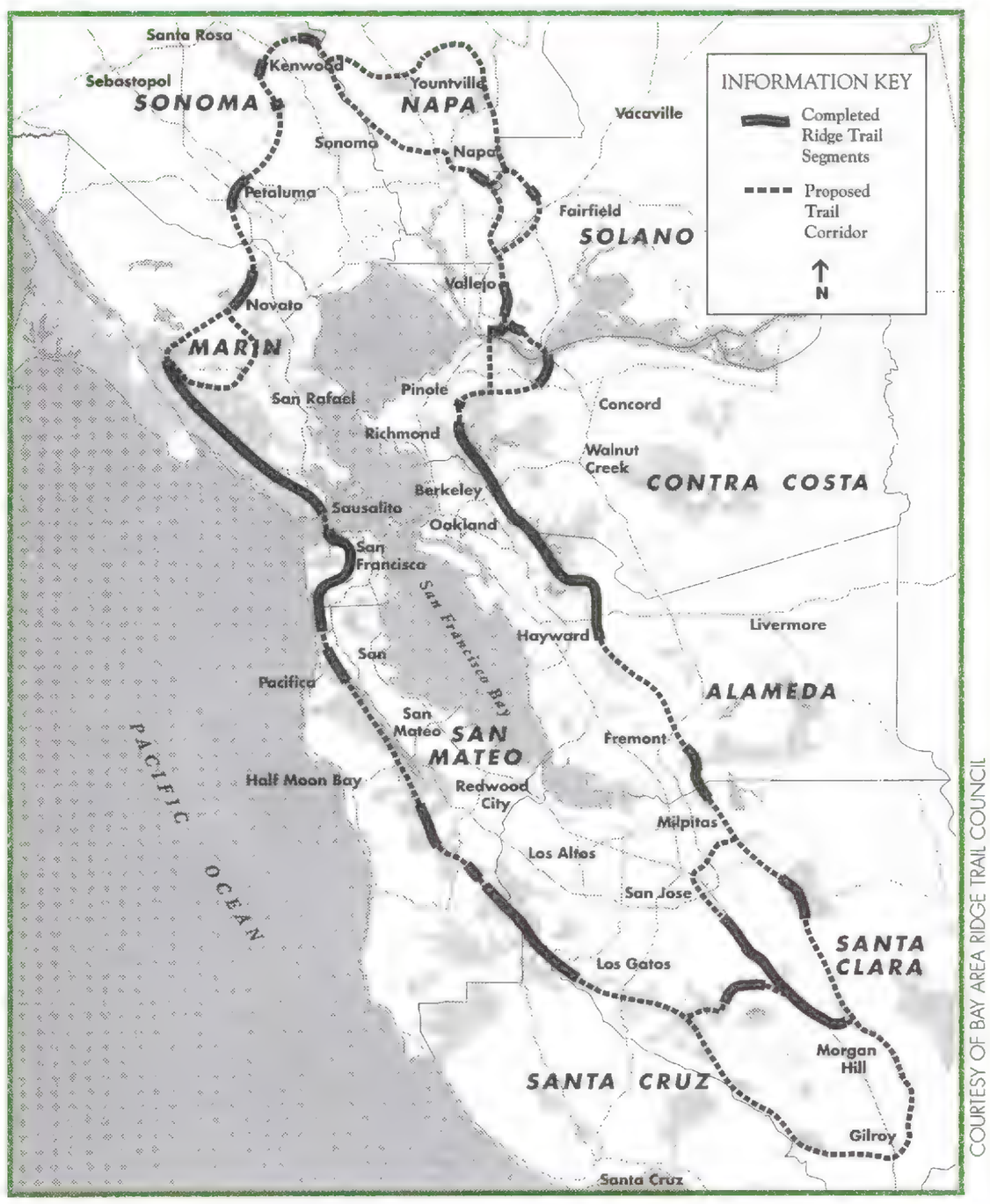
37. Preserve native habitat. Call California Oak Foundation 510/763-0282 or visit www.californiaoaks.org.

38. The Bay Area Transportation and Land Use Coalition works to encourage agencies, developers, and citizens to take action that will lead to sustainable land use patterns and efficient transportation. Call 510/540-7289; coalition@igc.org; or see www.transcoalition.org.

39. Help conserve our natural resources. The local chapter of the Sierra Club works directly on local issues affecting the Bay Area—particularly San Francisco, Marin, Contra Costa, and Alameda counties, advocating for compact growth, infill development, and better public transportation. You can volunteer to serve on a committee, or to work behind-the-scenes. Contact Volunteer Services (510/848-0800, ext. 11).

    Birds are the focus of the San Francisco Bay Chapter of the Audubon Society's efforts to protect wildlife and natural habitats around the Bay. Call 510/843-2222 for information on volunteer opportunities.

    The non-profit Save the Bay has been working for four



COURTESY OF BAY AREA RIDGE TRAIL COUNCIL

decades to protect and restore the Bay, to create shoreline parks, and prevent filling of the Bay. Volunteers are needed to help with office work and different types of research, including legal issues. Call 510/452-9261 or visit www.savesfbay.org.

The San Francisco Bay Trail is a hiking and bicycling trail that when completed will completely circle San Francisco Bay. The Bay Trail Project is a non-profit organization housed within ABAG, the Association of Bay Area Governments in Oakland, working to complete the trail. The Project needs volunteers to develop trail segments, review new trail opportunities, and take part in wildlife surveys, among other activities. Call 510/464-7935 for more information.

The Bay Area Ridge Trail Council is another non-profit working to complete a second, wider ring around the Bay, with scenic views from the ridge tops. Call 415/391-9300 or see www.ridgetrail.org.

40. Get involved in habitat restoration. The Presidio Park Stewards work in the Presidio, removing exotics, collecting seeds, and planting natives. Call 415/561-3034, ext. 3444. The Golden Gate National Recreation Area (GGNRA) needs volunteers to restore habitat in the Marin Headlands, at Crissy Field, along Redwood Creek, etc., count hawks in Marin, monitor snowy plovers at Ocean Beach, census birds at Alcratraz, and help at native plant nurseries in Tennessee Valley or Fort Funston. Call Theresa Kreidler with GGNRA at 415/561-4756 for more information.

41. **Volunteer at the California Academy of Sciences.** Become a docent. Help in the Research Department. Call Rosalind Henning 415/750-7154.

42. **Take advantage of the educational resources at the California Academy of Sciences. Sign up for classes, lectures, and field trips. Visit our exhibits, library, and Biodiversity Resource Center. Call 415/750-7145. Or see www.calacademy/org.**

PHOTO: AQUATIC OUTREACH INSTITUTE

Volunteer of the future.

Catalyst for Creeks

PHOTO: LISA VIANI

Baxter Creek in El Cerrito was "daylighted" in 1996 thanks to Carole Schemmerling and other creek advocates.

When Carole Schemmerling isn't busy babysitting her two young granddaughters, she can usually be found near a creek, cleaning up trash, weeding, or planting native plants. Although she denies this, it is largely through the efforts of Schemmerling and the Urban Creeks Council that many of the Bay Area's streams are being brought back to life. But when Schemmerling, who has volunteered for the Council for close to 17 years, first suggested to Berkeley's Parks Commission that they dig up their long-buried creeks, "they just stared at me blankly," she admits.

Schemmerling and other creek advocates persevered, and in 1984, a stretch of Strawberry Creek in the Berkeley flatlands that had been hidden underground for years was opened up, as part of the transformation of an old railroad right-of-way. As a child in "the slums of Philadelphia...the creeks were an oasis to me, a haven," recalls Schemmerling. When she arrived in California she saw snippets of streams still flowing openly throughout the East Bay, and she determined to bring back as much of those creeks as she could. In August 1995, a stretch of Codornices Creek was opened up. Schemmerling wanted to paint blue creek "stripes" across streets beneath which creeks were buried. This idea evolved into the "critter" stencils on Berkeley storm drains.

"There are places I'll never go to or see," says Schemmerling. "But I want to know they're there." Meanwhile, she focuses her efforts in urban areas where nature is often at a premium. "I have no illusion we can return things to the way they once were," she explains. "But you do what you can."

The San Francisco Recycling Program provides waste prevention, reuse and recycling information, assistance and materials to San Francisco residents, businesses, institutions and schools. For free assistance, please call the San Francisco Recycling Program at 415/554-3400 or visit www.sfrecycle.org.

You'll find answers to many environmental questions at SF Environment, the City's Department of the Environment, www.sfenvironment.com. They also run programs to reduce harmful pesticide use. Volunteers can help in the office and in the field 415/554-6390.

Did you know that on April 5th and 6th, Jupiter, Saturn and Mars will appear near a thin crescent Moon low in the west after sunset? Did you know that the "Planetary Alignment" on May 5th is not really an alignment at all? (and it won't have disastrous effects on Earth!)

Want to find out more about astronomy, but don't know where to start? Join us as we host Bay Area astronomy clubs to celebrate **International Astronomy Day, Saturday, April 8th**. Safe solar observing, telescopes, astronomical computing and other astronomical activities will be demonstrated from 10-5 pm in Cowell Hall and, weather permitting, the Whale Fountain Courtyard.

Sky Shows

Solar System 2.0
Through September 3

How many moons does Earth really have? Are planets orbiting beyond Pluto? Is Pluto really a planet? If you thought you knew all there was to know about the planets, come find out how new discoveries are revealing strange facts about our Solar System.

Weekdays: 2 pm
Weekends: 2, 3, 5 pm

Mysteries of the Millennia
Through June 11

What cosmic mysteries wait to be solved as we enter the 21st Century? How has our understanding of our place in the Universe changed with the coming of each new millennium?

Weekends: 1 pm

Neighbors in Space
Ongoing

A show designed for families with younger space travelers takes a look at the Sun, Moon and the planets of our solar system.

Weekends: 12 pm

The Sky Tonight
Ongoing

Take a naked-eye tour of the current night sky over San Francisco, including constellations, planets, the Moon, and other celestial sights.

Weekends: 4 pm

On Our Cover
Photo of the South Pole taken by the spacecraft Galileo. Courtesy of NASA.

Benjamin Dean Lecture Series

Looking Back: A Historical Approach to Understanding Modern Astronomy

How Henry Norris Russell Changed Astronomy
Dr. David DeVarkin, Smithsonian Institute

Dr. David DeVarkin

A century ago, astronomers used telescopes, gathering information about planets, stars, comets and nebulae using their eyes, photographic plates and spectrographs. Night after night, month after month, year in and year out, astronomers measured, recorded, and collected. Lives were spent "minding the heavens."

Today, modern technology has freed the astronomer from the nightly vigil. Few spend more than a week or two at a telescope each year and are now able to observe without ever leaving their offices. This technological revolution has been profound, but there has been an even more pervasive change in the astronomical profession. Instead of the open-ended collecting, organizing and classifying of data, astronomers now ask specific questions, frame hypotheses, and then test these hypotheses with focused observing programs.

Using perspectives gained from his biographical study of the Princeton astronomer Henry Norris Russell, Dr. David DeVarkin, Curator of History of Astronomy at the National Air and Space Museum at the Smithsonian Institution, will explain how this came about. He will look specifically at how Russell and the astronomers of the University of California's Lick Observatory wrestled with these issues, and each other, in the first four decades of the 20th century.

April 25 (Tuesday)

'. . .A Spring of Water in a Dry and Thirsty Land': William Huggins' Response to Kirchhoff's Great Discovery
Dr. Barbara Becker, UC Irvine

In mid-nineteenth century Britain, a small group of chemists, physicists, and amateur astronomers adapted the spectroscope to analyze the light from celestial bodies. These investigative efforts played an important part in the development of what came to be called the "new" astronomy: "astronomical physics" or "astrophysics."

Dr. Barbara Becker

William Huggins (1824-1910), a non-professional astronomer whose rise to prominence in

Cont. on pg.14

April

Special Members' Lecture

Searching for the Deadliest Spider in the World

With Dr. Charles Griswold, Academy Arachnologist

PHOTO: E. S. ROSS

Tropical Wolf Spider defends its egg mass.

What is the deadliest spider in the world? How can we recognize it? Should we be worried?

Arachnologists (scientists who study spiders and their kin) learn and predict which spiders are, or may be, dangerous by studying the collections and libraries of museums like the California Academy of Sciences, conducting fieldwork all over the world, and using tools such as cladistics, computers, comparative ethnology, and molecular biology.

Dr. Charles Griswold, Schlinger Curator of Arachnology at the Academy, will present a slide-illustrated lecture featuring new discoveries about spider biology and classification.

Thursday, April 6, 2:00 pm & 7:30 pm
Morrison Auditorium

Call of the Wild: A Wolf...Real or Imagined?

With Pat Tucker and Bruce Weide, Biologists

PHOTO: CRAIG HJELMERVIK

Pat Tucker and Bruce Weide with Montana and Indy.

Koani, a 100-pound gray wolf from Montana, and her dog companion, Indy, will join wildlife biologists Pat Tucker and Bruce Weide in a dynamic presentation.

As an ambassador wolf, Koani represents Wild Sentry, a non-profit organization that blends science and the humanities to entertain and inform. Wild Sentry's programs emphasize the wolf as a symbol of the wild. Although Koani is a socialized wolf, the program stresses the inappropriateness of wolves as pets.

Tucker and Weide have dedicated their lives to the plight of the wolf. Before starting Wild Sentry, Pat was a biologist for the National Wildlife Federation. Tucker and Weide will offer a glimpse into the elusive lives of wolves, telling stories of wolves collected from myth and folklore. Through slides and stories, the speakers will explore cultural attitudes towards the wolf, its natural history, and behaviors.

Book signing to follow lecture.

Wednesday, April 12, 2:00 pm & 7:30 pm
Morrison Auditorium

Openhouse – May 10

For Members

Venomous animals descend on the Academy at Open House for Members this May, but you won't need a snake hook.

A great place to start your visit is in our newest exhibit ***VENOMS: Striking Beauties***. Then visit the world-famous collections of the Academy's eight research departments and go "behind-the-scenes" at the Steinhart Aquarium.

Wednesday, May 10, 6:00 pm to 9:00 pm

Members' Open House is an exclusive benefit of membership. This is a perfect time to invite your friends to become members so they may attend this event with you. Consider a gift membership, which offers year-round benefits and helps support education and research at the Academy of Sciences. Call (415) 750-7111, fax (415) 750-7346, or e-mail Membership@calacademy.org

Photos above: (top) Dr. Patrick Kociolek welcomes young Academy Members to last year's Open House, (bottom) Betsey Cutler with members in Ornithology & Mammalogy

Mother's Day

Sunday, May 14

Academy members who are mothers, together with their families, receive free admission to the EXPLORATORIUM and the SAN FRANCISCO ZOO on this special day. Present your membership card at these facilities.

Upcoming Lectures

Saving the Gray Whale
with author Serge Dedina
Book signing to follow
Wednesday, June 14

Sea Birds & Marine Mammals of Monterey Bay
with Debra Love Shearwater, field ornithologist
Wednesday, July 12

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November and December 1999: $125 to $999

Donor Circle membership contributions support the Academy and significantly advance our work in research and education. It is with great pleasure that we gratefully acknowledge these gifts.

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LECTURES

Spring Lectures

These lectures are held in Morrison Auditorium. Tickets may be purchased at the door. However, advance registration is recommended as lectures often sell out.

Darwin's Ghost: *The Origin of Species* Updated

Steve Jones
Professor of Genetics, University College, London

PHOTO: JERRY BAUER
Steve Jones

In his new book, *Darwin's Ghost: The Origin of Species Updated*, Jones takes up the challenge of rewriting the book of the millennium, Darwin's *The Origin of Species*. Until the publication of Darwin's book, biology was little more than a series of unconnected facts. Darwin connected those facts with his theory of evolution, which became the grammar of the living world. Darwin had only the facts of the nineteenth century to support his argument. In *Darwin's Ghost*, Jones reargues Darwin's case for evolution using the twentieth century's astonishing advances. With such diverse examples as viruses, dinosaurs, cloned sheep, and dog shows, Jones discusses what Darwin meant and why we know he was right.

April 18 (Tuesday), 7:30 pm
$6 members/$10 non-members
Book signing immediately following the lecture

Journey of the Pink Dolphins

Sy Montgomery
Naturalist, Author

Montgomery has made four journeys into the heart of the Amazon to study an enigmatic, rare species of freshwater dolphin. Considered the world's most primitive whale, the pink river dolphin (*Inia geoffrensis*), hardly looks like a dolphin at all. The forehead is bulbous, the face ends in a long tubular snout, the dorsal fin is just a subtle curve, and the flippers are as big as wings. Most surprising, coloration can be gray, white, or even shocking pink. Montgomery's new book *Journey of the Pink Dolphins: An Amazon Quest*, presents her research into the biology and natural history of this mysterious creature, and documents human life in the flooded rain forest that encompasses the dolphins' several habitats.

May 23 (Tuesday), 7:30 pm
$6 members/$10 non-members
Book signing immediately following the lecture

PHOTO: DIANNE TAYLOR-SNOW
Pink River Dolphin

The Venoms Lecture Series

This lecture, offered in conjunction with the Academy's current exhibition, ***VENOMS: Striking Beauties***, will be held in Morrison Auditorium at 7:30 pm. The exhibition will be open for viewing from 6:30 to 7:30 pm.

Venoms and the Adaptive Radiation of Snakes

Harry Greene
Professor of Evolutionary Biology, Cornell University

Snake venoms are a complex mixture of immobilizing and digestive chemicals primarily used for feeding. As a result, some species can consume animals weighing up to one and a half times their own mass. Greene discusses the natural history and evolution of venomous snakes, including how venoms protect snakes against their own predators and how the use of mimicry protects non-venomous species. He discusses the lives of individual black-tailed rattlesnakes based on his field studies in Arizona over the past twelve years.

April 4 (Tuesday)
$6 members/$10 non-members

The Wildlife Talks

Sponsored by the Wildlife Conservation Society and California Academy of Sciences.

The Wildlife Talks feature research scientists from the Wildlife Conservation Society and the California Academy of Sciences who are making significant contributions to national and international scientific research. These presentations focus on the intersection between science and conservation. Highlighting their most current research, the speakers demonstrate how the collection of scientific data in the field contributes to resource management decisions worldwide. The programs are held in Morrison Auditorium, California Academy of Sciences.

Please note: Due to circumstances beyond our control, our speaker scheduled for May 11, Dr. Ellen Pikitch, is unable to be here. Instead, we are pleased to present the following lecture, which will be held in Morrison Auditorium:

Butterflies and Biodiversity: Conservation in Action in Madagascar

Dr. Claire Kremen
Research Associate, Stanford University

In Madagascar, four out of every five species is unique to the island. The country is being devastated by deforestation due to growing human populations. Kremen discusses the current efforts of the Wildlife Conservation Society's Madagascar Conservation Program: examining the spatial distribution of wildlands and studying the diversity of insect pollinators. Learn how some of the world's smallest creatures, such as butterflies and beetles, are helping to make conservation a priority in a country rich in wildlife, insects and plants.

May 11 (Thursday), 7:00 pm

Adult and Family Courses and Field Trips

Introducing a Host of New Learning Activities

Pyramid Lake

Field Trip

Pyramid Lake, 45 minutes northeast of Reno, Nevada, has been called the most beautiful desert lake in North America. It's a remnant of Lake Lahontan, the great Pleistocene lake that once covered much of the Great Basin. Lahontan's history is preserved in the unique tufa formations, the largest in the world, that lie in the Pyramid Lake basin. Rendezvous at the Visitors Center in the Marina area. Travel on paved and dirt roads around the lake studying the fascinating geology of the area. Observe the abundant wildflowers and migratory birds including white pelicans which breed and nest on Anaho Island in Pyramid Lake. Tour the Lahontan Cutthroat Trout and Cui ui hatcheries. Learn about the threats to the lake, which belongs to the Pyramid Lake Paiute Tribe. Camp overnight at Warriors Point.

Kenneth Miller
April 29, 30 (Saturday and Sunday)
11:00 am Saturday to 4:00 pm Sunday
$85 members/$95 non-members

Introduction to Botanical Field Sketching

Workshop

Learn to create a botanical field journal using sketches and written observations during this relaxing and informative two-day workshop. Mornings at the Academy include an introduction to the basic structures of flowers and leaves, using published field journals for inspiration. Afternoons are spent sketching at the Strybing Arboretum. Beginning and advanced artists welcome.

Carolynne Griffin
April 29, 30 (Saturday and Sunday)
10:00 am – 4:00 pm
$95 members/$105 non-members

Three Women of Science: Observers of Wild Primates

Seminar

Wesley highlights the amazing lives and accomplishments of Leakey's "three angels": Dian Fossey, Birute Galdikas, and Jane Goodall. Learn more about their groundbreaking field work and research into ape behavior and conservation, as Wesley examines Fossey's work with the mountain gorillas of the Virungas, Galdikas' study of the orangutans of Borneo, and Goodall's dedication to the chimpanzees of Gombe.

Karla Wesley
May 8 (Fossey); May 15 (Galdikas); May 22 (Goodall)
(3 Mondays): 7:00 – 9:00 pm
Series of three: $35 members/$40 non-members
Individual seminars: $15 members/$20 non-members
Open to students ages 14 - 17, when accompanied by an adult.

Ring Mountain: Rocks, Animals, and Flowers

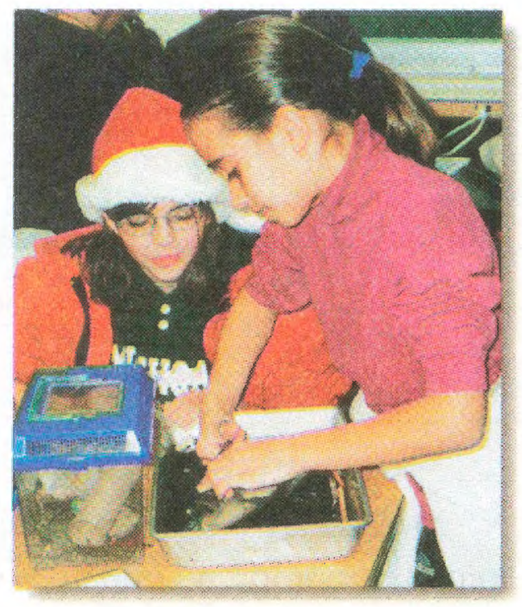
Field Trip

The Ring Mountain Preserve, run by the Marin County Open Space District, is home to unusual rocks and minerals, animals, and flowers. On a moderate hike from Bay level to the top of the mountain at 602 feet, Ursin-Smith discusses rare plants, such as the Tiburon paintbrush and the Tiburon mariposa lily, that grow only in serpentine. Look for the tiny species of blind harvestman spider, that lives under the mountain's serpentine rocks and nowhere else. Check out the circular petroglyphs carved on rock outcroppings by Miwok Indians some 2,000 years ago. This hike is a good opportunity for inquisitive young people to explore wildlife in an unusual geologic setting. Open to families with children ages ten and older.

Rolf Ursin-Smith
May 20 (Saturday)
9:00 am – 1:00 pm
$20 adults/$15 children, members
$25 adults/$20 children, non-members

Junior Academy

What a wonderful mess! After several days of Junior Academy Winter Workshops, Academy staff were kept busy cleaning the teaching rooms where children had been dissecting various specimens such as dogfish sharks, mollusks, octopus, and squid, as well as making earthworm terrariums and African masks. Increasing the wonder and excitement, interactions with frogs, toads, lizards, mice and an assortment of wildlife added to the diversity of 'hands-on' learning. Fourteen different courses were offered over the winter break; children ages 6-8, and 9-14 participated in classes that took them on tours of the Aquarium, Museum, 'behind the scenes' events, and on expeditions out into Golden Gate Park to collect and identify specimens. Finally, two field trips organized by Jack Laws and Joe Kinyon from the Academy's Education Department, trekked out to Fitzgerald Marine Preserve and Mountain Lake for an exciting afternoon exploration.



JA class: Vertebrate Evolution

JA class: Desk Drawer Rock Hound

To check on class availability, please call (415) 750-7575. For a course catalog call: (415) 750-7100, visit www.calacademy.org/education

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Wildlife Talks			
Butterflies and Biodiversity	___X$6	___X$10	=_____
B. DEAN LECTURES	**Qty/Members**	**Qty/Non-members**	**Total**
Henry Norris Russell	___X$3		=_____
William Huggins' Response	___X$3		=_____
ADULT AND FAMILY	**Qty/Members**	**Qty/Non-members**	**Total**
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Botanical Field Sketching	___X$95	___X$105	=_____
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Ring Mountain (Field Trip)			
Adults	___X$20	___X$25	=_____
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JUNIOR ACADEMY
Please call (415) 750-7100 for class catalog.

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Dean, from pg.9

scientific London was synchronous with the adaptation of the spectroscope, was recognized in his own lifetime as one of the principal founders of this new science.

Dr. Barbara Becker, from the University of California at Irvine, will present an analysis of unpublished archival material which brings new evidence to bear on Huggins' contributions.

May 9 (Tuesday)

All lectures are $3, in the Morrison Planetarium at 7:30 pm. Information: (415) 750-7141.

World Wildlife Fund

Kathryn Fuller, President of World Wildlife Fund (WWF), in conversation with Roy Eisenhardt, will discuss WWF's efforts to affect change in environment and natural resources management around the world and in California.

Commonwealth Club office: 595 Market St (at 2nd St.), San Francisco
Reception: 4:45 pm, Program 5:50 - 6:30 pm
$7 members/$10 non-members

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In Retrospect...

By Academy Archivist Michele Wellck

75 Years Ago

April 15, 1925 – Departure of the Academy's U.S.S. *Ortolan* Expedition to the Revillagigedo Islands, an island group lying 300 to 600 miles off the Pacific coast of Mexico. Scientific staff aboard the Navy minesweeper consisted of seven Academy curators and taxidermists plus three Mexican scientists who had been invited on the expedition. In addition to studying each of the four islands in the Revillagigedo group, the Academy was also able to visit other Mexican Pacific islands (such as the Tres Marias) and collect water and plankton samples along the route of travel for study by the Scripps Institution for Biological Research.

The expedition returned to San Francisco on June 10, 1925 and was regarded by the Director at the time, Barton Warren Evermann, as "the most important and most successful the Academy has ever sent out." One reason for the great success of the expedition was the Navy's willingness to install refrigeration equipment for the use of the taxidermists, who could then bring back hundreds more bird and egg specimens than they had time to prepare while in the field. New geographic names suggested by the Academy and accepted by the Mexican government included Mount Gallegos (highest mountain on Clarion Island), Mount Evermann (central peak of Socorro Island), and Ash Heap (highest elevation on San Benedicto Island).

SPECIAL COLLECTIONS/CAS LIBRARY

The members of the 1925 Revillagigedo Expedition at the dock in San Diego before departing. L to R: Francisco Contreras, Frank Tose (chief taxidermist), G Dallas Hanna (paleontologist), Raymond Duhem (photographer), José M. Gallegos, Joseph R. Slevin (herpetologist), Eric Knight Jordan (paleontologist), Captain M. M. Nelson, Hartford H. Keifer (entomologist), H. L. Mason (botanist), Octavio Solis, and John T. Wright (taxidermist).

Outstanding Volunteer: Diane Richards – A Sucker for Cephalopods

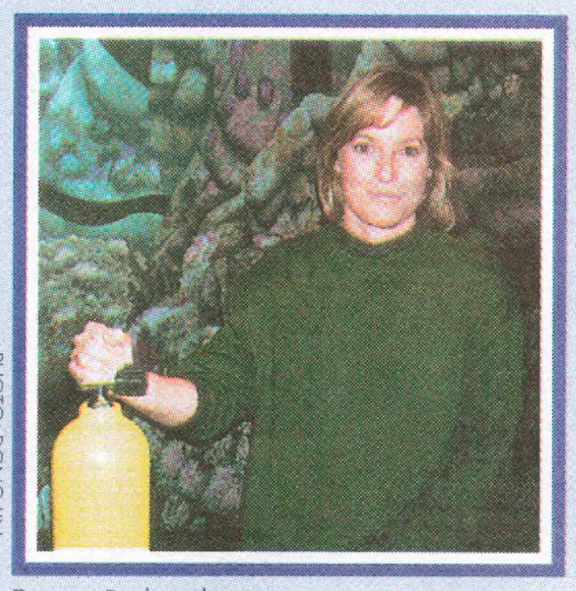

PHOTO: DONG LIN

Diane Richards

Imagine cleaning the Academy's Farallon tank when much to your surprise, an irritated octopus latches onto your mask and threatens your air supply? This adventurous encounter actually happened to one the Academy's most treasured volunteers, Diane Richards. While others may have panicked, Diane remained calm and cool, quickly surfacing so that the zealous animal could be removed. Remarkably, Diane bears no ill will and describes herself (with an unabashed pun) as a "sucker for cephalopods."

Diane became a Tide Pool Volunteer nearly eight years ago. One of her goals as a volunteer in the aquarium was to learn more about marine biology, and she has certainly succeeded. She later enrolled in S.F. State's Masters program in Creative Writing, with hopes of someday combining her skills to become a science writer.

In addition to her stint at the Tide Pool, she dons her mask and flippers and dives in wherever she is needed. In the former dolphin tank, she bonded with Thetis (one of the two Pacific white-sided dolphins who lived here for many years), and learned first hand of the intelligence of harbor seals. Missy, in a playful mood, skillfully unbuckled Diane's SCUBA gear underwater. In the Roundabout, Diane cleans the tank, feeds the rays, has helped stretcher a shark, and generally does anything she can to help her supervisor, aquatic biologist Carey Linder.

Diane currently works as Membership Coordinator for the SETI Institute (Search for Extraterrestrial Intelligence). *They* may not have found it yet, but Diane has plenty of evidence that it exists underwater!

While we cannot promise that you will be up close and personal with a shark or octopus (there's a waiting list for volunteer divers), the Academy offers many other interesting and unique volunteer opportunities. Celebrate National Volunteer Week April 9-15 by calling our Volunteer Office at (415) 750-7154.

ACADEMY CALENDAR

April

1 Saturday

Snake Foolery
12:30 & 2:30 pm (p. 6)

Turkish Silk Weaving
1 pm (p. 7)

2 Sunday

Paper Crane Folding
11:30 am – 3 pm (p. 6)

Let It Bee Venom
12:30 & 2:30 pm (p. 6)

4 Tuesday

Venoms/Snakes Lecture
7:30 pm (p. 12)

Striking Fishes
1 pm (p. 6)

6 Thursday

The Deadliest Spider
2 & 7:30 pm (p. 10)

8 Saturday

Crane-*ology*
12:30 pm (p. 6)

Colombian Folk Dance
1 pm (p. 7)

Int'l Astronomy Day *(p. 9)*

9 Sunday

Striking Fishes – see Apr 4

11 Tuesday

Dangerous Liaisons
2 pm (p. 6)

12 Wednesday

Call of the Wild
2 & 7:30 pm (p. 10)

13 Thursday

Painting *"The Book fo Cranes"*
12:30 – 3 pm (p. 6)

15 Saturday

European Lace-Making
1 pm (p. 6)

18 Tuesday

Darwin's Ghost
7:30 pm (p. 12)

19 Wednesday

Tarantulas
12:30 & 2:30 pm (p. 6)

22 Saturday

Earth Day at the Academy
(p. 8)

23 Sunday

Earth Day Continues
(p. 8)

25 Tuesday

Henry Norris Russell
7:30 pm (p. 9)

27 Thursday

Dangerous Liaisons – see Apr 11

29 Saturday

Paper Crane Folding – see Apr 2

Pyramid Lake Field Trip
(p. 13)

Botanical Field Sketching
10 am – 4 pm (p. 13)

30 Sunday

Let It Bee Venom – see Apr 2

Botanical Field Sketching
10 am – 4 pm (p. 13)

May

6 Saturday

Traditional Arts from Tonga
12 pm (p. 7)

7 Sunday

Paper Crane Folding – see Apr 2

Black Widows To Go
12:30 pm (p. 7)

8 Monday

Three Women of Science
7 – 9 pm (p. 13)

9 Tuesday

William Huggins' Response
7:30 pm (p. 9)

10 Wednesday

Dangerous Liaisons – see Apr 11

Members' Openhouse *(p. 10)*

11 Thursday

Butterflies and Biodiversity
7 pm (p. 12)

14 Sunday

Japanese Mochi Pounding Ceremony
1 pm (p. 7)

Studying Venomous Snakes
12:30 & 2:30 pm (p. 7)

15 Monday

Three Women of Science – see May 8

19 Friday

"Gardens of Eden" Ball *(p. 3)*

20 Saturday

Painting *"The Book of Cranes"* See Apr 13

Striking Fishes – see Apr 4

Ring Mountain Field Trip
9 am – 1 pm (p. 13)

21 Sunday

Paper Crane Folding – see Apr 2

Tarantulas – see Apr 19

22 Monday

Three Women of Science – see May 8

23 Tuesday

Pink Dolphins
7:30 pm (p. 12)

28 Sunday

Let It Bee Venom – see Apr 2

Cranes in California
11:30 am & 2:30 pm (p. 6)

30 Tuesday

Striking Fishes – see Apr 4

31 Wednesday

Dangerous Liaisons – see Apr 11

VISITOR INFORMATION

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GOLDEN GATE PARK

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